# Docket No. SACHPO148U\$ (FORMERLY SOU747/4-13CON US)

Serial No. 10/795,772

#### **CLAIMS**

(Currently amended) A compound of the formula

$$\begin{bmatrix} R_3R_2R_1N & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ &$$

wherein each  $R_1$ ,  $R_1$ ,  $R_2$ ,  $R_2$ ,  $R_3$ ,  $R_3$ ,  $R_4$  or  $R_5$  is independently selected from the group consisting of alkyl, aryl, aralkyl and -CH<sub>2</sub>-CH(OR<sub>6</sub>)-CH<sub>2</sub>N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub> <u>An\_, wherein any R<sub>1</sub>, R<sub>2</sub> or R<sub>3</sub> group may be the same or different than other R<sub>1</sub>, R'<sub>1</sub>, R<sub>2</sub>, R'<sub>2</sub>, R<sub>3</sub> or R'<sub>3</sub> groups, and wherein each R<sub>6</sub> can be independently selected from the group consisting of H, alkyl and aralkyl, a 2,3-epoxypropyl group having the structure: one or more R<sub>6</sub> group is selected from the group consisting of:</u>

and a 3-chloro-2-hydroxypropyl group having the structure:

and wherein An is an anion, provided that at least one of the R<sub>6</sub> groups is the 2,3-epoxypropyl group or the 3-chloro-2-hydroxypropyl group.

2. (Original) The compound of claim 1, wherein one R<sub>1</sub> group and the R<sub>4</sub> group comprise a single alkyl group having one or more carbons, and wherein the alkyl group

Page 2 of 8

#### Docket No. SACHPO148U\$ (FORMERLY SOU747/4-13CON US)

Serial No. 10/795,772

forms part of a cyclic structure that further comprises two positively charged nitrogen centers separated by a three-carbon fragment bearing an -OR<sub>8</sub> group.

3. (Currently amended) A compound of the formula

$$\begin{bmatrix} OR_4 \\ R_3R_2R_1N \\ \oplus \end{bmatrix} An^{\bigoplus}$$

wherein each  $R_1$ ,  $R'_1$ ,  $R_2$ ,  $R'_2$ ,  $R_3$  or  $R'_3$  group is independently selected from the group consisting of alkyl, aryl, aralkyl and -CH<sub>2</sub>-CH(OR<sub>4</sub>)-CH<sub>2</sub>N<sup>†</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub> An<sup>--</sup>, wherein any  $R_1$ ,  $R_2$  or  $R_3$  group may be the same or different than other  $R_1$ ,  $R'_1$ ,  $R_2$ ,  $R'_2$ ,  $R_3$  or  $R'_3$  groups, and wherein each  $R_4$  can be independently selected from the group consisting of H, alkyl and aralkyl, a 2,3-epoxypropyl group having the structure: one or more  $R_4$  group is selected from the group consisting of:

and a 3-chloro-2-hydroxypropyl group having the structure:

and wherein An— is an anion, provided that at least one of the  $R_4$  groups is the 2,3-epoxypropyl group or the 3-chloro-2-hydroxypropyl group.

Page 3 of 8

#### Docket No. SACHPO148US (FORMERLY SOU747/4-13CON US)

Serial No. 10/795,772

- 4. (Original) The compound of claim 3, wherein the R<sub>1</sub> and R'<sub>1</sub> groups comprise a single alkyl group having one or more carbons, and wherein said alkyl group forms part of a cyclic structure that further comprises two positively charged nitrogen centers separated by a three-carbon fragment bearing an -OR<sub>4</sub> group.
- 5. (Original) The compound of claim 3 wherein the one or more  $R_4$  groups is a 2,3-epoxypropyl group.
- 6. (Original) A modified carbohydrate formed by the reaction of: the compound of claims 1,2,3,4 or 5; and a carbohydrate having one or more hydroxyl groups.
- 7. (Original) The modified carbohydrate of claim 6 wherein the carbohydrate is a starch.
- 8. (Cancelled)
- 9. (Currently amended) The method of using the compound of claims 1, 2, 3, 4 or 5 to make A method of making a modified carbohydrate comprising reacting the compound of any one of claims 1, 2, 3, 4 or 5 with a carbohydrate.
- 10. (Currently amended) The method of using A method of waste water treatment comprising adding the modified carbohydrate of claim 6 as to a waste water treatment agent.
- 11. (Currently amended) The method of using the modified carbohydrate of claim 6 in a papermaking process claim 9 wherein the carbohydrate is a starch.

Page 4 of 8

#### Docket No. SACHPO148US (FORMERLY SOU747/4-13CON US)

Serial No. 10/795,772

- 12. (New) The compound of claim 1 wherein at least one of the one or more R<sub>6</sub> groups is a 2,3-epoxypropyl group.
- 13. (New) A compound having the structure:

wherein each R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> group may be independently selected from the group consisting of alkyl, aryl, aralkyl and An<sup>-</sup> may be one or more organic or inorganic, monovalent or polyvalent anion as needed to obtain a neutral compound.

14. (New) The compound of claim 13, having the structure:

#### Docket No. \$ACHPO148US (FORMERLY SOU747/4-13CON US)

Serial No. 10/795,772

### 15. (New) A compound having the structure:

wherein each  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  group may be independently selected from the group consisting of alkyl, aryl, aralkyl and An $^-$  may be one or more organic or inorganic, monovalent or polyvalent anion as needed to obtain a neutral compound.

#### 16. (New) The compound of claim 15, having the structure:

## 17. (New) The compound of claim 15, having the structure:

Page 6 of 8